ISD Checklist

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Approved By: (signature)
Name: Joe Hennessy
Title: Chief, ISD

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Title: Contents of the Software Preliminary Design Review

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Contents of the Software Preliminary Design Review (PDR)

The objective of this review is to determine readiness to proceed with software detailed design activities. Use the following checklist to ensure that key elements of the high-level design, along with supporting process and status information, are presented for review.

- ❑ **Introduction**
    - ❑ Goals of this review; review prerequisites, scope (e.g., all subsystems, COTS/GOTS, database schemas, & firmware), agenda, and products
    - ❑ Introduction to the review panel and review process to be followed (e.g., Request for Action (RFA) or Review Item Disposition (RID) reports, schedule)
    - *Project Overview*
    - ❑ Purpose and overview of the software project or overall Mission Project (e.g., Mission goals, orbit, launch, operational characteristics)
    - ❑ Software project organization and key personnel, including (if applicable) how the project fits within the overall Mission organization and identification of the project's systems engineers at the Mission Project level
    - ❑ External dependencies
    - ***Software Development Overview –*** Development methodology being followed
    - ***Review Item Dispositions (RIDs) or Requests for Action (RFAs) and responses*** from the Software Requirements Review (SRR)

- ❑ **Requirements summary –** High-level review and update of the project's requirements, highlighting changes since SRR
    - ❑ Overview of requirements documents
    - ❑ Requirements for reuse of existing software
    - ❑ Unique requirements
    - ❑ Performance and/or quality requirements
    - ❑ Safety and/or security requirements

- ❑ **Operational scenarios,** highlighting any changes in operational concepts resulting from design activities
    - ❑ Normal operations scenarios
    - ❑ Fault detection, isolation and recovery (FDIR) strategy
    - ❑ Hazard reduction strategies

- ❑ **High-level design –** At a minimum, include the following:
    - ❑ System architecture, external interfaces and end-to-end data flow
    - ❑ Design drivers (e.g., performance, reliability, usability, hardware considerations)
    - ❑ Overview of software architecture, including context diagram
    - ❑ ICD status and key interface details
    - ❑ List of subsystems, tasks, or major components **–** e.g., user interface, database, task management.

Contents of the Software Preliminary Design Review (PDR)
(Continued)

❑ **High-level design** (continued)
  For each subsystem, task, or major component
      ❑ Mapping of system-level requirements to the subsystem, with any safety-critical require-
        ments highlighted
      ❑ Derived requirements
      ❑ Design alternatives, including reuse of heritage software and/or COTS tradeoffs
      ❑ High-level design – Context diagram, functional allocations, descriptions of major mod-
        ules, data flow, and internal interfaces
      ❑ Current design status and issues

❑ **Software Management Plan** – Review the following, highlighting changes since SRR:
  Management approach
    ❑ Organization/WBS
    ❑ Project relationship and interfaces, if applicable
    ❑ Software size estimates, budgets, and staffing
    ❑ Development schedule showing key receivables, deliverables, milestones, and dependencies
    ❑ Management overview, including metrics to be collected
    ❑ Risks and risk mitigation plans
    ❑ Infusion of previous Lessons Learned; collection of new Lessons Learned
  Technical approach
    ❑ Requirements management approach and tools
    ❑ Configuration Management, Product Assurance, and Software Safety plans and tools
    ❑ Development approach, including peer review/walkthrough plans and project standards
    ❑ Documentation plan, including when documents are to be baselined
    ❑ Build/release plan and contents
    ❑ Software development and test environments and tools
    ❑ Test strategy/plan, including test drivers/simulators, test data, and discrepancy tracking
    ❑ Strategy or timeline for IV&V and Independent Technical Authority involvement, if applicable
    ❑ Delivery, installation, and maintenance plan

❑ **Status** – Current schedule, milestone, ICD, and cost/effort status

❑ **Issues, TBDs, and action items**